EFFECTS OF MINIMAL GROUP IDENTITY ON PROCESSING OF EVALUATIVE INFORMATION

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by

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EFFECTS OF MINIMAL GROUP IDENTITY ON PROCESSING OF EVALUATIVE INFORMATION

An Abstract of a Thesis by

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The Problem.

The purpose of this study was to assess whether minimal group identity, as established through a minimal group paradigm, could influence processing of evaluative information. Minimal group identity was measured through a series of trait scales on which subjects were asked to rate own group and out group members. Processing speed was measured through a semantic priming paradigm previously used with stereotyped primes and traits. It was predicted subjects would rate own group members higher than outgroup members. Additionally it was predicted that subjects' reaction times would be faster to positive character traits after their own group label than the outgroup's label.

Procedure.

Seventy-two Drake University students (36 female and 36 male) were randomly divided into one of two groups by a dot estimation task and assigned a group label (YOF or LAJ). Subjects performed the semantic priming task with minimal group labels serving as primes of positive and negative character traits. Evaluative trait scales were used as dependent measures of ingroup bias.

Findings.

Analysis of trait scales revealed that the minimal group paradigm, as presented in this study, failed to establish ingroup bias as predicted. Unexpectedly, subjects consistently rated outgroup members higher than ingroup members across all evaluative traits. Results of reaction time analyses were contingent upon the establishment of minimal group identity; therefore those results can not be interpreted as supporting or refuting the main hypothesis of this study.

Conclusions.

Because minimal group identity was not established in this study, it should not be concluded that minimal group labels cannot be reference points that would facilitate processing of positive and negative information. A test of this hypothesis requires clear determination that the minimal group paradigm formed group boundaries and established ingroup bias.

Recommendations.

In a future replication the minimal group paradigm could again be used in conjunction with a semantic priming task, but with an experimental population of either all male or all female subjects. Additionally, a mixed gender population should be used, but with more interaction between and within groups, a competitive element or a self esteem manipulation. It is possible that the results of this study are not a reflection of the inability of this paradigm to work, but rather an establishment of the lower limits of group identification necessary to influence processing of evaluative information.

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CHAPTER I

Introduction

"The study of intergroup relations has come irrevocably to the foreground as a result of the actualities in human affairs today: The sharp razor's edge between war and peace in a tense world, the dependence of nation upon nation for the existence and development of each" (Sherif, 1966, p. 10).

Were it not for the date of this quote, one would think this was a summary of current group conflicts in Africa, the Middle East, or central Europe. Because of the intense human suffering caused by conflict between groups, the challenge remains for social psychologists to attempt to grasp the complex nature of intergroup relations. Sherif defines a group as a social unit that "consists of a number of individuals who, at any given time, have role and status relationships with one another, stabilized in some degree, and who also possess a set of values or norms regulating the attitudes and behavior of individual members" (1966, p. 10). This definition implies a dynamic, interactive relationship in which the group members contribute, but also draw from the collective properties of the group (Bornewasser & Bober, 1987; Rabbie & Horowitz, 1988). Intergroup behavior is interaction that occurs based solely on the individual's association or membership in certain social groups. Group membership by itself, however, does not explain conflicts and confrontations that arise between groups and attachment that group members feel towards their group and its members. The multifaceted nature of group membership was addressed by Tajfel (1978) when he suggested three components of group membership; a cognitive component, an evaluative component, and an emotional component. The cognitive component involves the person's knowledge that they belong to the group, by whatever criterion the group has established for membership. The evaluative component is that

part of group membership about which the individual makes a positive or negative value connotation. The emotional component concerns how one feels about one's own group membership, fellow group members and other groups and their members. Sherif, Harvey, White, Hood, and Sherif (1961) examined the multidimensional nature of group membership and intergroup relations in a setting naturally conducive to the manipulation and study of group boundaries; that of summer camp.

In Sherif's classic demonstrations, two groups of campers were independently and arbitrarily established. Prior to each experiment the boys had interacted as members of the camp, but under their arbitrary group identifications they were in competition with one another. The study was designed to provide optimally competitive and frustrating situations for the boys. The competition and frustration accentuated group boundaries and created strong ingroup bias (Sherif et al., 1961), an evaluative bias in favor of members of the perceiver's group (Brewer, 1979). The arbitrary group boundaries were subsequently diffused when a superordinate goal was introduced by the experimenters which required joint effort by both groups. Ingroup bias is not manifested exclusively in evaluations concerning ingroups and outgroups, but also can be manifested behaviorally. The Sherif et al. (1961) studies provide some of the earliest experimental documentation of behavioral consequences resulting from group membership.

Rabbie and Wilkens (1971) stated that the concept of ingroup bias rests on the perception of superiority of one's own group, although the perception of the outgroup is not necessarily depreciated. By definition then, the existence of an outgroup is implied, in that own group identity is in part defined by and contingent upon the perception of other groups (Tajfel, 1974a). Why do we form groups and what causes the positive evaluative and

behavioral bias towards our own group? There are a number of theories which attempt to explain the formation of groups and the development of ingroup bias.

Cognitive Differentiation Approach

The Cognitive Differentiation approach (Dion, 1979; Wilder, 1978) used a perceptual and cognitive analysis of the intergroup situation. Wilder stated that through social categorization our social environment is divided into "two mutually exclusive categories" which are an ingroup and an outgroup. Individuals process information in a way that furthers the distinction between the ingroup and the outgroup. Ingroup members perceive congruities between themselves and other ingroup members, while perceptions of differences between themselves and members of the outgroup become more salient. These perceptions of ingroup similarity and outgroup differentiation can lead to an individual's anticipation of further differences with outgroup members and congruities with ingroup members. This expectation leads to a self-fulfilling prophecy phenomena, as individuals come to behave in a manner that elicits differentiating information and behavior from outgroup members while confirming expectations about fellow ingroup members. The ingroup bias that results is believed to be a direct result of the social categorization process.

Cultural Norm Hypothesis

Tajfel (1970), in the Cultural Norm Hypothesis, stated that the socialization process in our culture has guided us to favor groups to which we inherently belong on the basis of characteristics such as sex, race, or nationality. The preference for own group members on the basis of perceived similarity is in contrast to our dislike of outgroup members due to perceived dissimilarity. The Cultural Norm Hypothesis assumes the presence of a

"generic norm of behavior" towards others perceived as members of outgroups, in which the most salient characteristics of the group serve as the basis for the categorization. The salient characteristics of individuals with similar characteristics facilitates the perception of groups; subsequently, group members display positive bias towards ingroup members and negative bias toward outgroup members. Using the Cultural Norm Hypothesis, Tajfel was able to explain the basis by which groups were differentiated, but left unanswered the question of why group differentiations were important to individuals, in some cases so much so that group members were willing to give their lives in defense of group boundaries. Tajfel and other researchers observed the inadequacy in the Cultural Norm Hypothesis to fully explain group membership and developed Social Identity Theory as a result.

Social Identity Theory

Social Identity Theory resulted from refinement of the Cultural Norm Hypothesis as Tajfel and colleagues sought to more adequately explain the formation of groups (Billig & Tajfel 1973; Turner, 1975). There are three main assumptions of Social Identity Theory (Turner & Brown, 1978). First, individuals define and evaluate themselves in terms of their social groups. Second, an individual's social identity is positive or negative according to the subjective cultural status of the groups which contribute to that identity. Third, comparisons with relevant outgroups on mutually significant dimensions provide the basis for determining the worth of own group membership to the individual. The comparisons are fueled by a drive, inherent to humans as social creatures, for a positive social identity.

Underlying these assumptions are two main components of Social Identity Theory: a perceptual-cognitive component and a motivational component (Hong & Harrod, 1988; Ng, 1989). The motivational component

involves the desire for a positive social identity. When a group is identified as possessing qualities that are perceived as desirable by other members of society, individuals will seek to associate themselves with those groups and concomitantly with those qualities; vicariously enhancing their own "value" or quality in society. Whether or not those qualities are better is the subjective judgment of the individual as he or she is confronted with the variety of groups and identifications that society presents (Ng, 1989).

The perceptual-cognitive component involves categorization and comparison. Categorization of both social and nonsocial stimuli is seen as occurring due to humans' attempts to simplify their complex environment (Abrams & Hogg, 1988; Allen & Wilder, 1975; Billig & Tajfel, 1973; Hamilton, 1981; Rabbie & Wilkens, 1971; Tajfel, 1974; 1978; 1982a; Taylor & Moghaddam, 1987; Turner, 1982; Wilder, 1981). Referring to social categorization, Tajfel (1974b) says:

In any complex society an individual confronts, from the beginning of his (sic) life a complex relationship into which he must fit himself. One of the most important and durable problems that is posed to an individual by his insertion into society is to find, create, or define his place in these networks. Social categorization is a process of bringing together social objects or events in groups which are equivalent with regard to an individual's actions, intentions, attitudes and system of beliefs. (p. 67)

It is the perceived similarity of our "actions, intentions, attitudes and beliefs" with others, facilitated by categorization, that results in the evaluative bias. The process of categorization accentuates congruities between the individual and their group as well as making differences with outgroups more salient (Abrams & Hogg, 1988; Reykowski & Smolenska, 1982).

Social comparison is the process by which intergroup differences are made salient, providing group members an opportunity to acquire a sense of the value of their group membership (Abrams & Hogg, 1988; Festinger, 1954; Taylor & Moghaddam, 1987). The comparison process is an attempt on the part of group members to gain information about the outgroup as a basis for evaluation to achieve distinctiveness and in doing so to discover more about own group status (Lemaine, Kastersztein, & Personnaz, 1978; Moscovici & Piacheler, 1978; Turner, 1975). The importance of the dimension of comparison, as well as the position of the groups on that dimension, affect the values associated with it (Commins & Lockwood, 1979). As the importance of the dimension increases, the values attributed to the ingroup become increasingly more positive and those associated with the outgroup become more negative (Branthwaite, Doyle, & Lightbown, 1979; Sachdev & Bourhis, 1987; Turner & Brown, 1978).

Historical Premises of Social Identity

The concept of social identity and its importance to human development did not originate with the research of Tajfel and associates; it has been examined since the emergence of psychology in the United States in the late 1800s through the writing and research of William James (1890). James divided the self, or that part of ourselves from which identity emerges, into an "I" and a "Me." The "I" referred to the subjective element of our consciousness while the "Me" referred to the outward expression of ourselves that formed the basis for other individual's impressions. The "Me" was further subdivided into material, spiritual, and social selves. Each of these components contributed to the individual's identity or self. The social self was defined as how one portrayed oneself to others whose views are important to the individual. James said, "A man (sic) has as many social selves as there

are distinct groups of persons sabout whose opinion he cares" (p. 294). In the 1920s and 1930s sociologist George Mead (1962) condensed James' "Me" component into a single "sociological me"; an internalization of our social roles. He proposed two stages critical to the development of the social self. First the individual determined what the attitudes of other individuals were towards him or her, both in social and nonsocial contexts. Second, the social self was shaped by the attitudes and opinions of the social groups of which the individual was a member. The self reached full development by combining the individual attitudes of others with pre-existing organized social or group attitudes, thereby " becoming an individual reflection of the general systematic pattern of social or group behavior in which it and the others are involved " (p. 158). In short, a significant portion of the whole of our identity is determined by group membership. Mead anticipated the work of Social Identity theorists when he said, " we also have to some extent positions in various groups which give a means of self-identification, but there is back of all these matters a sense of things which in the whole we do better than other people do " (p. 205). The "me" that does things "better than other people do" to whom Mead refers, can be interpreted as a collective "me" including both the individual and other ingroup members, and the "sense of things...we do better than other people do" can be thought of as ingroup bias.

Empirical Support of Social Identity Theory

The desire to acquire and maintain a positive social identification has been demonstrated in a wide range of studies. Stephan (1977) found that individuals made more dispositional attributions to positive behaviors and fewer dispositional attributions to negative behaviors for ingroup members; that is, positive characteristics were more likely to be associated with the

ingroup, thereby enhancing the subjective worth of that particular group's membership (Pettigrew, 1979).

Brown and Wade (1987) measured intergroup attitudes involved in a task with a superordinate goal that required cooperation among all groups while simultaneously manipulating the salience of the group boundaries. Results showed that in situations in which the group's roles were not clearly defined, attitudes toward the outgroup were less friendly. According to Social Identity Theory this less friendly attitude is attributable to the need of the groups to differentiate and gain group identification. The same task was utilized in the second part of the study; however, the group boundaries were made salient to subjects, and more friendly attitudes were reported toward the outgroup. The salience of the group boundaries allowed subjects to make clear group differentiations; the friendly attitudes toward outgroup members were probably more indicative of a sense of relief at having clear differentiations than an expression of friendship for outgroup members. The superordinate goal placed an environmental demand on both groups to cooperate to meet the goal; had Brown and Wade (1987) assessed attitudes after the goal had been met, it seems likely that the groups would have displayed indifference in their evaluations as predicted by Social Identity Theory.

Turner, Brown, and Tajfel (1979) found that subjects sacrificed personal gain to maximize group differences. Results of this study demonstrated that when the opportunity for the group boundaries to become more salient was presented, subjects took it, even at the expense of personal gain. The Turner et al. (1979) and Brown and Wade (1987) studies provide evidence for the desire in humans for group membership, due to the fact that

group membership is one vehicle for the attainment of social identity, an integral part of one's overall sense of self.

There is substantial documentation that an increase in the salience of group membership leads to marked ingroup favoritism (Boyanowski & Allen, 1973; Doise, 1978; Hensley & Duval, 1976; White, 1977; Worchel, Andreoli, & Folger, 1977). Ellemers and Van Knippenberg (1988) have shown that high status group members showed more ingroup identification than members of low status groups, probably due to the positive identity associated with high status group membership. Hogg and Sunderland (1991) demonstrated that when subjects were assigned to a low self esteem condition and categorized, they discriminated significantly more against the experimental outgroup members as compared to experimental ingroup members. Along similar lines a number of studies (Branthwaite et al., 1979; Sachdev & Bourhis, 1984; Simon & Brown, 1987) have looked at the effects of minority/majority status on intergroup evaluations and found results consistent with predictions from Social Identity Theory. The results indicated that minorities were generally less fair in evaluations of majority group members as compared to minority group members, and that minority members laid particular stress on their group membership as opposed to majority group members. The majority group members' desire for positive group identity had been satisfied, which lessened their immediate emphasis on group membership as a means of attaining a positive social identity. It has been demonstrated, however, that should the majority group members' group status become threatened, they would act to stabilize the status relationships and maintain their superior standing (Hogg, 1988).

The study of the dynamics of intergroup relations in a laboratory, as cited above, would not have been possible were it not for the seminal work

done by Rabbie and Horowitz (1969) and Tajfel, Flament, Billig, and Bundy (1971), described below. The challenge in the study of intergroup relations in a laboratory was to discover a means of removing the phenomena from the environment while still preserving the foci of study, which were group boundaries and subsequent ingroup bias.

Origins of Laboratory Study of Intergroup Relations

The laboratory study of intergroup relations appeared to be inherently impossible due to the complex and relatively uncontrolled nature of our social environment. This was the predicament facing researchers as they attempted to isolate specific factors that facilitated group formation (Brown, Tajfel, & Turner, 1980; Turner, Brown, & Tajfel, 1979). Observation of intergroup relations in the environmentally controlled atmosphere of a laboratory required the establishment of "minimal" conditions, which would establish group facilitation, without the myriad of social factors present in the environment that would confound precise analyses of ingroup bias. Rabbie & Horowitz (1969) attempted to establish minimal conditions by dividing subjects into groups labeled "blue" and "green" completely arbitrarily with no other tasks involved, except for evaluative group trait measures. The study's failure to find ingroup bias provided a basis for further research that sought to establish the base or lower limits of group designation (Brewer, 1979; Tajfel, 1982b).

Tajfel and colleagues at Bristol University also sought to develop a paradigm that would establish the lower limits of group designation, and still elicit the group effect. The minimal group paradigm was the result of their efforts (Tajfel, 1970, 1979; Tajfel, Flament, Billig, & Bundy, 1971; Turner & Brown, 1978). The minimal group paradigm required the following six

criteria of the experimental situation be met in order to elicit ingroup bias (Taylor & Moghaddam, 1987):

1. There should be no face to face interaction between subjects in the ingroups, in the outgroups, and especially between the groups.
2. The individual's group membership should always remain anonymous.
3. There should be no instrumental or rational link between the criteria for intergroup categorization and the rewards subjects would allocate to ingroup and outgroup members.
4. The rewards should not have any utilitarian value for the subjects making them.
5. Subjects should be presented with a number of different options in terms of how they allocate rewards to ingroups and outgroups.

The allocation options with which the subjects were presented included fairness, maximum joint profit (MJP), maximum ingroup profit (MIP) and maximum difference in favor of the ingroup (Turner, 1983). In the minimal group design, fairness implied that subjects allocate equal rewards to both ingroup and outgroup members. MJP is similar, but offered subjects the opportunity to maximize allocations across both ingroup and outgroup members. In the MIP condition the ingroup received the most profit regardless of what the outgroup received. Should the subjects choose the maximum difference, they would be maximizing the amount of difference in rewards received between ingroup members and outgroup members. In terms of the amount of reward received, the maximum difference allocation option was not the most profitable option for the subjects, but it allowed the greatest differentiation between the rewards received by the groups.

6. Rewards should be made as important as possible to the subjects so that they are real decisions about concrete rewards.

Using these six experimental criteria the following paradigm was developed. In the first half of the initial study subjects were asked to estimate the number of dots appearing on a screen. They were informed that during these dot estimation tasks some people tended consistently to overestimate, while others consistently underestimated the number of dots. The estimates were taken and ostensibly scored by a confederate; subjects then were assigned to groups, supposedly on the basis of their overestimation or underestimation, while in actuality group assignment was random. Adhering to the guidelines already mentioned, subjects were informed privately about their group membership. The method of measuring ingroup bias involved subjects distributing monetary rewards via allocation matrices. The matrices were constructed to provide three allocation opportunities. One involved giving awards to two ingroup members other than the subject. Another matrix involved giving awards to two members of the outgroup and a third included giving awards to one member of each group. The results lead to the conclusion, subsequently well documented, that simple categorization of subjects into ingroups and outgroups leads to differential evaluation and discrimination in favor of the ingroup (Billig & Tajfel, 1973; Doise et al., 1972; Platow, McClintock, & Liebrand, 1990; Tajfel et al., 1971; Turner, 1975); but see Rabbie and Horowitz (1969). Studies utilizing the minimal group paradigm have demonstrated ingroup bias regardless of status differentials (Sachdev & Bourhis, 1984; 1987); in the absence of competition or even contact between the groups (Brewer & Silver, 1978; Moghaddam & Stringer, 1986; Platow et al., 1990; Rabbie & Wilkens, 1971; Tajfel & Billig, 1974); and

also with belief and attitudinal similarities between the ingroups and the outgroups (Allen & Wilder, 1975; Diehl, 1988).

The basis of the categorization may at first appear rather "trivial" and "unimportant" to the observer, as Tajfel himself noted (1978). The minimal group paradigm filters environmental noise that enhances, affects, or distorts intergroup relations, so that the entire process of intergroup relations is brought down to an observable, controlled function. The triviality of the minimal conditions is apparent only from a non-laboratory context (Moghaddam & Stringer, 1986). In a laboratory environment, the minimal group distinctions are believed to assume the same categorizational power as societal identifications such as gender and race (Amancio, 1989). The categorization sets up assumptions and expectations for target persons' characteristics which may influence the perceivers' affect and possible behavior towards the target (Desforges et al., 1991; Howard & Rothbart, 1980; Smith & Zarate, 1990). The assumptions and expectations of the target person generated in minimal group paradigms are thought to be conceptually equivalent to stereotypes, in that they are consensual beliefs of one group concerning the defining characteristics of another group (Ashmore & Del Boca, 1981). The assumptions and expectations in the minimal group paradigm do, however, differ from stereotypes in that they are not held chronically by the individual and are based on minimal group identity, as opposed to cognitively well established societal identities which provide the bases for stereotypes.

Cognitive Representations of Stereotypes

The study of stereotypes as cognitive structures mediating social information processing has become a subject of much interest (Devine, 1989; Dovidio et al., 1986; Hamilton, 1981; Stephan, 1989). Research on the

cognitive origins of stereotyping is based on the primary assumption that stereotyping begins with categorization, as individuals categorize the complex environment, they stereotype to simplify processing of information related to groups, which emerge from categorization (Fiske, 1989).

Unlike information processing about nonsocial objects, there is a self relevant dimension involved in social information processing so that categorizations are weighted with stereotyped evaluations and value judgements related to ingroup and outgroup membership (Stephan, 1977). Dovidio et al. (1986) explored the ingroup dimension of cognitive processing by adapting a semantic priming paradigm developed by Rosch and Mervis (1975) from a nonsocial to a social context. Rosch and Mervis tested the speed of access to information by priming a target word with a category. The speed of the reaction times to the target words were faster for examples of the primed category. Reaction times are one means of measuring the presence of cognitive structures that facilitate the processing of social and nonsocial categorizational information (Bettin, McCarthy, & Wood, 1985; Dovidio et al., 1986; Gaertner & McLaughlin, 1983; Rosch & Mervis, 1975). The speed of the reaction time is assumed to reflect the accessibility of the information. That is, the more frequently a cognitive pathway is used, the quicker that information can be accessed (Bargh & Pietromonaco, 1982; Higgins, King, & Mavin, 1982).

Dovidio et al. (1986) substituted the nonsocial categories used by Rosch and Mervis (1975) of *furniture* and *fruit* with the racial categories *white* and *black*. These semantic primes were presented with stereotyped, evaluative traits of both African Americans and Caucasians and reaction times were recorded. The results revealed faster reaction times to Caucasian stereotyped traits and positive characteristics when preceded by the prime *white* than

when preceded by the prime *black*. Subjects also responded faster to negative character traits and African American stereotyped traits when followed by the prime *black*. It should also be noted that all the subjects in this study were Caucasians, which demonstrates ingroup facilitation of information processing.

In a similar study, Zarate and Smith (1990) tested the speed of access of racial and gender categories depending on both the target's and the perceiver's own category membership. The target in this case was a picture of another person. Subjects' reaction times were recorded for each picture categorized by race and sex. They found that females were categorized faster by sex and males faster by race. It was also found that subjects categorized same sex targets more quickly than opposite sex targets, again showing a differential speed of categorization for ingroup members.

Dovidio, Perdue, Gaertner, and Ellyson (in press) and Perdue, Dovidio, Gurtman, and Tyler (1990) further adapted the semantic priming paradigm from racial group primes to the ingroup-outgroup designators, *we* and *they* and *us* and *them*. It was hypothesized that subjects would identify with the self-relevant pronoun and react faster to *we* and *us* followed by positive character traits. The primes were masked by a series of X's and presented for a period of 75 milliseconds. As predicted subjects' reaction times overall, were faster when the primes *we* and *us* were followed by positive character traits, as compared to the primes *they* and *them* when followed by positive character traits. These results provide further evidence of an ingroup advantage in speed of processing, even though the primes were presented in a manner that did not allow conscious or controlled processing. The results also offer evidence of the powerful affect self-relevance of stimuli has on cognitive processing. The ingroup designators of *we* and *us* were reacted to more quickly

than the primes *they* and *them* because self-relevant information in social judgments has been demonstrated to be highly accessible and more efficiently processed (Bargh, 1984; Markus, 1977; Markus & Smith, 1981; Ross & Sicoly, 1979), biased toward positive information (Bradley, 1978; Greenwald, 1980; Markus, 1980), and more easily retrieved (Kuiper & Rogers, 1979; Rogers, 1981; Rogers et al., 1979; Ross & Sicoly, 1979). These studies indicated that positive identity associated with ingroup membership established "cognitive reference points" which facilitated processing of positive information, as it related to ingroup membership (Rosch & Mervis, 1975). The minimal group paradigm has demonstrated that these "reference points" can be created under environmentally controlled conditions in the laboratory. The question which then arises is whether the minimal conditions and subsequent identifications are sufficient to facilitate differential information processing of the evaluative traits in the same manner that Dovidio et al. (in press) demonstrated with cognitively well established racial group identifications and self-relevant pronouns.

Hypotheses

Hypothesis 1. It was predicted that random assignment of subjects into one of two groups (*LAJ* or *YOF*) established arbitrarily through the minimal group paradigm would elicit differentially positive evaluations for ingroup members on a series of evaluative trait scales (see Appendix D). If upheld, this hypothesis, while already demonstrated in previous studies (Brewer & Silver, 1978; Howard & Rothbart, 1980; Platow et al., 1990) would have served as a manipulation check for the attainment of ingroup bias.

Hypothesis 2. The semantic priming paradigm, through reaction times to positive and negative character traits, was predicted to measure the immediate effects of minimal group identity on the processing of evaluative

information about one's own group and an outgroup. As in the Perdue et al. (1990) and Dovidio et al. (in press) studies, it was expected that the ingroup and outgroup labels would affect the processing of the traits. It was predicted that the ingroup designator (*LAJ* or *YOF*) would activate self relevant cognitive paths resulting in faster reaction times to positive character traits (Collins & Loftus, 1975; Devine, 1989; Fazio, Sanbonmatsu, Powell, & Kardes, 1986; Foss, 1982; Neely, 1977; Perdue & Gurtman, 1990). Reaction times to negative traits following outgroup labels were predicted to be similar to reaction times to the neutral prime of *house*. This is consistent with Social Identity Theory, which concludes that the minimal group paradigm may lead to ingroup enhancement but not necessarily outgroup derogation (Brewer, 1979; Dovidio et al., 1986; Platow et al., 1990; Rabbie & Wilkens, 1971).

Hypothesis 3. Subjects administered the evaluative trait scales after completing the semantic priming task were predicted to show more evaluative ingroup bias then the other half of subjects who completed the evaluative trait scales prior to the semantic priming task. This effect was predicted due to the longer amount of time subjects given the evaluative trait scales after the semantic priming task had to process their group membership and ingroup label.

CHAPTER II

Experiment 1

Method

Subjects

Forty-eight subjects (16 male, 32 female) participated in this experiment for extra credit in introductory psychology courses at Drake University.

Procedure

This experiment was conducted to establish that arbitrary group labels used in the second experiment did not differentially cue positive or negative trait representations in memory. The group labels were nonsense syllables, previously established as cueing neither positive or negative trait representations (Perdue et al., 1990). This study followed the procedure used in Dovidio et al. (in press) for stimulus presentation and reaction time recording, as follows.

"The purpose of this experiment is to determine the speed of categorization of people and objects. Your task will be to look at the computer screen on which the name of a group of people or objects like *dog* or *tree* will appear, and to read the name aloud and think about what you feel the typical member of that group is like. After a brief time the screen will go blank; then a second word like *shady, gnarled, faithful, or friendly* will appear, and you must decide as quickly and accurately as possible whether the second word can ever be true of that group (first word) or is always false. You will indicate your decision by pressing a computer key. Press "M or Z" for yes and "M or Z"

(order counterbalanced between subjects) for no. After you see the second word, hit one of the keys sharply and release. You should respond as fast and accurately as possible: we are recording both speed and the key you hit. We will begin with a set of practice trials using the categories *dog* and *tree*. We will now pause to answer any questions that you have and to allow you time to think of the typical *tree* and *dog*.

After the practice trials you will be presented with the names of groups of people, *XEH, YOF, QUG, GIW, WUH, LAJ*, taken from an earlier visual perception study. Again respond as quickly and accurately as possible whether the second word such as *kind, bad,* or *trustworthy* can ever be true or is always false of the groups of people classified as *XEH, YOF, QUG, GIW, WUH,* and *LAJ".*

The nonsense syllables were presented in the following pairs *XEH*: and *YOF, QUG* and *GIW* and *WUH* and *LAJ*. The order of pair presentation was randomized within subjects.

The Bargh and Pietromonaco (1982) reaction time procedure was used in which group labels were presented for 250 msec at the central fixation point and then disappeared. After a 250 msec delay the character trait appeared for 250 msec. Subject's were instructed to press the yes or no key (Z or M) in response to whether the trait word could ever describe that label or is always false for that label. Each label-trait combination, as well as the order of trait presentation was counterbalanced within subjects. The order of the yes and no keys was counterbalanced between subjects.

Results

A two (positive and negative character trait) by three (nonsense syllables) analysis of variance (ANOVA) was performed on the reaction times to establish that group labels did not elicit differential reaction times to

either the positive or negative character traits. The analysis was conducted on the labels *YOF*, *LAJ*, and *GIW*. The labels *QUG*, *WUH* and *XEH* were excluded from the analysis due to recording error. Results revealed no differences in reaction times to positive or negative character traits after the nonsense syllables, $F(1, 138) = .32, p = .573$. In addition, there were no nonsense syllable by evaluation interactions among the three labels $F(2, 138) = 1.32, p = .269$.

Discussion

Based on these results the nonsense syllables *YOF* and *LAJ* were selected for use in the second experiment as the minimal group labels.

Experiment 2

Method

Subjects

Seventy-two subjects (36 male, 36 female) randomly assigned to 12 groups of 6 (3 male and 3 female) were used in this study. Subjects were recruited from introductory psychology courses at Drake University and received extra credit for their participation.

Procedure

Subjects were assigned randomly to groups of six and told the purpose of this study was to examine certain properties of visual judgment. Two experimenters, both white, college aged males conducted the experiment for all subjects following the same procedure.

Dot Estimation Task. As in the original Tajfel et al. (1971) study, after informed consents were obtained from each subject, 40 images of varying numbers of dots were presented to the subjects (see Appendix E). Experimenter 1 instructed subjects as follows, "On the screen in front of you a number of dots will appear. Following each presentation, please estimate the

number of dots that appear on the screen and record your estimation on the score sheets that the experimenter has handed to you. Please use one score sheet per dot presentation, any questions." Subjects were seated at classroom style desks in a semicircle in front of a projection screen. Upon completion of the dot presentation task, Experimenter 1 ostensibly scored the estimation sheets, while actually randomly assigning subjects to either the *YOF* or *LAJ* groups. Subjects were then told, "because of a reduced subject pool, we will take advantage of your presence by having you participate in another study examining cognitive processing efficiency. In order to facilitate data recording, you will be placed into one of two groups (*YOF* or *LAJ*) based on your performance in the previous dot estimation task." Experimenter 1 lead one of the experimental groups (*YOF* or *LAJ*) into an adjacent room for the semantic priming task. Experimenter 2 lead the remaining group (*YOF* or *LAJ*) into a separate room to complete the semantic priming task. The order of experimenter, group label, and room was counterbalanced.

Semantic Priming Task

The next phase of the experiment involved a semantic priming task as used by Dovidio et al. (1986). Half of the subjects completed an evaluative checklist prior to the semantic priming task (see Appendix D), the other half completed the checklist after they finished the priming task. Subjects were seated at a computer and read the following instructions:

"The purpose of this experiment is to determine the speed of categorization of people and objects. Your task will be to look at the computer screen on which the name of a group of people or objects like *dog* or *tree* will appear, and to read the name aloud and think about what you feel the typical member of that group is like. After a brief time the screen will go blank; then a second word like *shady, gnarled, friendly, or faithful* will appear, and you

must decide as quickly and accurately as possible whether the second word can ever be true of that group (first word) or is always false. You will indicate your decision by pressing a computer key. Press "M-Z" for yes and "M-Z" for no. After you see the second word, hit one of the keys sharply and release. You should respond as fast and accurately as possible: we are recording both speed and the key you hit. We will begin with a set of practice trials using the categories *tree* and *dog*. We will now pause to answer any questions that you have and to allow you time to think of the typical *tree* and *dog* (experimenter observes subjects complete the practice trials and ensures that the computer task is understood).

Now you will be presented with the names of the groups of people, *LAJ* and *YOF*, whose membership was determined in the previous dot estimation task. Again respond as quickly and accurately as possible whether the second word such as *kind*, *bad*, or *trustworthy* can ever be true or is always false of the groups of people classified as *LAJ* and *YOF*."

The order of group label appearance in the computer task was counterbalanced; for half the subjects *YOF* was presented first and for the other half *LAJ* was presented first.

Subjects in the precomputer task checklist condition were instructed as follows: "Before we begin, we would like you to respond to a few questions. Using the scales I have handed to you, indicate the extent to which a member of the *LAJ* or *YOF* group ranks on this characteristic. When you are finished I will collect the packets and get you started on the computer task."

The reaction time task followed the guidelines of Bargh and Pietromonaco (1982). The group designators (*YOF* and *LAJ*) and *house* were presented as primes for 250 msec, at the central fixation point. After a 250 msec delay the target word (e.g., good, bad, drafty) appeared at the central

fixation point. Subject's responded yes or no as previously instructed. Each label-trait combination, as well as order of trait adjective presentation was counterbalanced within subjects. Half of the subjects responded yes with the letter Z and no with the letter M, for the other half of the subjects the order was reversed. Upon completion of the semantic priming task, subjects were debriefed thoroughly as to the true nature of the study including the rationale for the deception involved.

Manipulation Check

Subjects were given 2 lists of 15 bipolar positive and negative adjectives using a 9 point, Likert- type scale (see Appendix D) to rate ingroup and outgroup members. They were instructed to "indicate on the scales the extent to which a typical member of the *LAJ* or *YOF* group ranks on these characteristics." The adjectives were assembled from three previous ingroup-outgroup studies (Brewer & Silver, 1978; Howard & Rothbart, 1980; Platow et al., 1990) as measures of ingroup bias. These measures sought to demonstrate that the dot estimation task was successful in establishing the ingroup bias effect. Half of the subjects were given the evaluative checklist prior to the semantic priming task and the other half after the priming task. Half of the checklists, in each condition, began with the *LAJ* group and half with the *YOF* group.

CHAPTER III

Results

Manipulation Check

A two (group label) by two (group rated) by fifteen (trait adjective) analysis of variance (ANOVA) was performed on mean evaluative trait scale ratings to determine whether the minimal group paradigm established intergroup boundaries between the LAJ and YOF groups and ingroup bias for members of both groups. Results indicated differential ratings on the trait scales depending upon which group was rated, $F(1,70)= 14.12, p=.0001$. However, the significant effect was not in the predicted direction, as subjects in both YOF and LAJ groups rated outgroup members more favorably than ingroup members (Means 6.287 outgroup vs. 5.919 ingroup). This finding is further supported by the nonsignificant group label by group rated interaction, indicating that subjects were consistent in their higher ratings of outgroups and lower ratings of ingroups, regardless of the group to which they belonged, $F(1,70)= .08, p= .785$ (see Table 1).

A group label by trait interaction did reach significance, $F(14,57)= 3.20, p= .001$, so that subjects' ratings, on certain adjectives, were different depending on the minimal group label. Because the main effect of group rated was not in the predicted direction, the group label by trait interaction was not further explored statistically.

Reaction Times

A two (group label) by two (order of presentation) by two (prime) by two (evaluative adjective) repeated measures analysis of variance (ANOVA) was performed on subjects' reaction times.

There was a significant main effect of prime as subjects responded significantly faster to the prime *YOF* than to the prime *LAJ* (Means 792.149 vs. 805.679), F (3,64)= 26.88, p=.0001. This differential response to the primes was unexpected, as pretesting had established no differential reaction times to either prime. The positive or negative evaluative nature of adjectives following the primes also affected reaction times. Subjects' reaction times to the positive character traits (Mean 754.151) were significantly faster than reaction times to negative character traits (Mean 843.676), F (3,64)=18.952, p=.0001.

Group membership did not differentially affect reaction times, F (3,64)= .418, p=.741. There was no main effect of order, as subjects' reaction times did not differ whether they completed the computer task before or after filling out the evaluative trait scales, F (3,64)=.653, p=.584, and there were no significant two-way interactions involving the order condition.

There was a significant prime by evaluation interaction, F (3,64)= 5.3, p=.003. Subjects in both minimal groups responded quickest to positive traits after the *YOF* prime and slowest to negative traits after the *LAJ* prime. Reaction times to both primes (*YOF, LAJ*) did not vary with group membership, F (3,64)=.1682, p=.917. Minimal group membership did not affect subjects' responses to either the *YOF* or *LAJ* primes. In addition group membership did not interact with the evaluative quality of adjectives that followed the primes, F (3,64)= 1.93, p=.133. *YOF* and *LAJ* group members responded at similar rates to positive and negative adjectives.

Contrary to the main hypothesis, the group by prime by evaluation interaction was not significant, F (3,64)= .560, p=.643 (see Table 2). Subjects in both minimal groups did not respond faster to positive, as compared to

negative traits after their own group prime, nor to positive as compared to negative traits after the outgroup prime.

Table 1

Mean Ratings of YOF and LAJ Minimal Group Members on Evaluative Trait Scales

	Group Membership			
	YOF		LAJ	
Trait	Ingroup	Outgroup	Ingroup	Outgroup
Peaceful/ Aggressive	6.028	5.694	5.361	5.694
Independent/ Conforming	5	5.444	5.694	6.250
Very likeable/ Difficult to like	5.861	6.278	6.75	6.778
Passive/ Forceful	5.139	5.222	4.667	5.583
Trustworthy/ Untrustworty	5.917	6.583	6.222	6.806
Friendly/ Unfriendly	6.111	6.639	6.444	6.778
Honest/ Dishonest	6.028	6.528	6.556	7.028
Unselfish/ Selfish	5.611	5.889	5.528	5.833
Flexible/ Rigid	5.639	5.944	6.194	5.917
Intelligent/ Unintelligent	6.167	6.778	6.861	7.083
Helpful/ Unhelpful	6.139	6.472	6.256	6.778
Fair/Unfair	6.111	6.772	6.5	7
Warm/Cold	5.750	6.333	6.389	6.417
Strong/Weak	5.556	6.389	6.306	6.528
Cooperative/ Competitive	5.722	5.778	5.083	5.444
Overall Means	5.785	6.179	6.054	6.4

Table 2

Mean Reaction Times of YOF and LAJ Minimal Group Members to Positive and Negative Character Traits following Ingroup and Outgroup Primes.

	Group Membership			
	YOF		LAJ	
	Ingroup (YOF)	Outgroup (LAJ)	Ingroup (LAJ)	Outgroup (YOF)
Positive trait	660.5	805.13	829.44	714.5
Negative trait	752.73	901.84	946.05	803.72

CHAPTER IV

Discussion

A body of past research involving the minimal group paradigm has led to the well-documented conclusion that simple categorization of subjects into ingroups and outgroups leads to differential evaluation and discrimination in favor of the ingroup (Billig & Tajfel, 1973; Doise et al., 1972; Platow et al., 1990; Tajfel et al., 1971; Turner, 1975; but see Rabbie & Horowitz, 1969). Studies utilizing the minimal group paradigm have demonstrated ingroup bias regardless of status differentials (Sachdev & Bourhis, 1984; 1987); in the absence of competition or even contact between groups (Brewer & Silver, 1978; Moghaddam & Stringer, 1986; Platow et al., 1990; Rabbie & Wilkins, 1971; Tajfel & Billig, 1974); and also with belief and attitudinal similarities between ingroups and outgroups (Allen & Wilder, 1975; Diehl, 1988).

The question remained whether the minimal conditions and group identifications resulting from the minimal group paradigm are sufficient to influence processing of evaluative information as demonstrated with cognitively well established racial labels and self-referent pronouns (Dovidio et al., 1986; Dovidio et al., in press; Perdue et al., 1990). Dovidio et al. (1986) presented the racial categories *white* and *black* as semantic primes to stereotyped, evaluative traits of both African Americans and Caucasians. Subjects were instructed to indicate whether the trait could ever be true of individuals belonging to either of the groups or was always false. The results revealed faster reaction times to Caucasian stereotyped traits and positive characteristics when preceded by the prime *white* than when preceded by the prime *black*. Subjects also responded faster to negative character traits and African American stereotyped traits when followed by the prime *black*. It

should be noted that all the subjects in this study were Caucasian, which demonstrates ingroup facilitation of information processing. Dovidio et al. (in press) and Perdue et al. (1990) further adapted the semantic priming paradigm from racial group primes to the ingroup-outgroup designators, *we* and *they* and *us* and *them*. It was hypothesized that subjects would identify with the self-relevant pronoun and react faster to *we* and *us* followed by positive character traits. The primes were masked by a series of X's and presented for 75 milliseconds. As predicted subjects' reaction times were faster when the primes *we* and *us* were followed by positive character traits, as compared to the primes *they* and *them* when followed by positive character traits. These results provide further evidence of an ingroup advantage in speed of processing, even though the primes were presented in a manner that did not allow conscious or controlled processing. The results demonstrate the powerful affect self-relevance of stimuli has on cognitive processing. The ingroup designators of *we* and *us* were reacted to more quickly than the primes *they* and *them* because self-relevant information in social judgments has been demonstrated to be highly accessible and more efficiently processed (Bargh, 1984; Markus, 1977; Markus & Smith, 1981; Ross & Sicoly, 1979), biased toward positive information (Bradley, 1978; Greenwald, 1980; Markus, 1980), and more easily retrieved (Kuiper & Rogers, 1979; Rogers, 1981; Rogers et al., 1979; Ross & Sicoly, 1979). These studies indicated that positive identity associated with ingroup membership established "cognitive reference points" which facilitated processing of positive information, as it related to ingroup membership (Rosch & Mervis, 1975). The intent of the present study was to examine whether arbitrary group labels, as established in the minimal group paradigm, could facilitate information processed about group characteristics as measured by a reaction time task.

Hypothesis 1 of this study predicted subjects would rate ingroup members higher on a series of evaluative trait scales, as a manipulation check of ingroup bias. As reported in the results, subjects did not rate ingroup members higher on the evaluative trait scales as predicted; instead, mean ratings of outgroup members were significantly higher than ratings of ingroup members of both minimal groups and with both primes.

The absence of ingroup bias in subjects participating in the minimal group task, a well-replicated paradigm, raises methodological and theoretical questions. The minimal group paradigm format in this study was patterned after the Tajfel et al. (1971) seminal study, using dot estimation to randomly divide subjects into two groups, but with some modifications. Tajfel's population consisted of 14-15 year old boys from a boarding school, divided into groups of eight. The present study used college students, counterbalanced for gender and run in groups of three. Tajfel measured ingroup bias through allocation matrices, while in the present study evaluative trait scales were used as a measure of ingroup bias. However, the minimal group paradigm has been replicated many times in studies with similar characteristics to the present study (Brewer & Silver, 1978; Doise et al., 1972; Rabbie & Wilkens, 1971). These studies do differ on a few points, namely demographic characteristics of subjects and the use of allocation matrices as measures of ingroup bias. Brewer and Silver (1978) and Rabbie and Wilkens (1971) recorded data from 72 subjects, the same number of subjects participating in the present study. Subjects were divided into groups of six by Brewer and Silver (1978) and three in Rabbie and Wilkens' (1971) study. As mentioned earlier, subjects in this study were divided into groups of three.

Two of the three studies had subjects of the same gender, with females used in Brewer and Silver (1978) and males used in Rabbie and Wilkens (1971). Gender was balanced across all groups in my study, which may partially account for the nonsignificant reaction time results. Deschamps and Doise (1974, cited in Doise & Dann, 1976) studied the effects of gender on intergroup performance evaluations. Ingroup bias was reported when groups were homogeneous in gender, using one female group and one male group. In the second condition groups were balanced, with equal numbers of females and males and ingroup bias was not found on evaluations, as in the present study. Deschamps and Doise (1974, cited in Doise & Dann, 1976) explained their findings as evidence of more cognitively established gender group identifications weakening minimal group labels' influence on evaluative information processing. Amancio (1989) designed a study examining how gender stereotyped character traits affected ingroup and outgroup ratings. The stereotyped male identity in society includes qualities such as autonomy and self distinctiveness, qualities which are conducive to ingroup favoritism as measured on evaluative trait scales. Amancio (1989) reported that in experimental conditions with evaluative traits not thought to be gender stereotyped, male subjects' behavior was more reflective of differentiating between groups and ingroup bias than female subjects. The traits used in the present study were compiled from several studies involving male and female subjects. Other studies with mixed gender populations (Brown & Wade, 1987; Desforges et al., 1991) did not find an effect of gender on evaluative ratings. It should be noted that the two studies mentioned above had extensive interaction within and between the experimental groups. The inter and intragroup contact may have strengthened subjects' identification with their group and subsequently reduced gender effects on evaluations.

In her review of minimal group studies Brewer (1979) states that the original Tajfel et al. (1971) minimal group paradigm represents extreme lower boundary conditions. Most studies since that time have used different experimental conditions to enhance the ingroup bias phenomenon such as competition, group outcome, outgroup similarity, and categorization salience. The implication here is that in the most extreme minimal conditions the experimental population should be as homogeneous as possible. The population homogeneity would then ensure that evaluative measures of minimal groups are not biased by pre-existing societal identifications. In spite of this knowledge the original Tajfel et al. (1971) paradigm was selected for use in this study. Because a study of the affects of minimal group identity on evaluative processing had not been done and a lower level needed to be established. Due to recording error, analysis of the trait scales by gender is not possible in this study, so the effect of gender on intergroup evaluations cannot be determined. All three studies report the use of allocation matrices along with evaluative trait scales, competitive, and/or cooperative conditions. While these studies report ingroup bias, as measured by evaluative trait scales, examination of the results reveals consistencies with results of the present study.

The trait scales used by Brewer and Silver (1978) consisted of six bipolar traits of which only three demonstrated consistent ingroup bias. While Rabbie and Wilkens (1971) report ingroup bias through product and performance ratings they also note that subjects in anticipating competition and anticipating no competition conditions, in ratings taken before the task, felt the other group would do a better job. The same subjects also rated membership in the other group as more attractive to them. Subjects in the no anticipation condition did not differentially rate their group or the other

group's membership or potential task performance. This parallels the present study's findings, as subjects did not anticipate any competition or interaction with other group members, but significantly rated outgroup members higher than ingroup members.

Similarly, Rabbie and Horowitz (1969) randomly divided subjects into groups labeled blue and green, with no interaction, competition or anticipation thereof, and did not find ingroup bias. Interestingly in one condition, experimenters' flipped a coin prior to trait scale administration to see who would receive a reward for participation. Despite their knowledge of the arbitrary determination of which group received a reward, subjects rated ingroup members higher than outgroup members. The reward provided a salient basis for differentiation that facilitated ingroup bias.

It appears that the occurrence of ingroup bias is contingent to an extent on either monetary rewards through allocation matrices or self esteem gains resulting from actual or anticipated competition or interaction. The allocation matrices imply that subjects will receive some reward themselves, just as they are allocating funds to others. Although the difference between trait ratings and distributing money to other subjects may seem insignificant, distributing money implies reciprocating rewards and may be more a reflection of self-interest and potential self-gain than of ingroup bias as assumed (Rabbie, Schot, & Visser, 1989). The presentation of the minimal group paradigm in the present study resembles those studies mentioned which did not find ingroup bias. Without more clearly defined differentiation and an increased element of self-involvement, the minimal group identifications appear unlikely to become sufficiently cognitively established to influence information processing.

In Hypothesis 2 of this study it was predicted that reaction times to positive and negative character traits, with minimal group labels as primes, would measure the immediate effects of minimal group identity on the processing of evaluative information about one's own group and an outgroup. The ingroup designators (LAJ or YOF) were predicted to activate self relevant cognitive paths, resulting in faster reaction times to positive character traits (Collins & Loftus, 1975; Dovidio et al., in press; Devine, 1989; Fazio et al., 1986; Foss, 1982; Neely, 1977; Perdue et al., 1990; Perdue & Gurtman, 1990). This hypothesis was not supported, as subjects did not respond differentially to positive or negative character traits when primed by their ingroup label. However, because ingroup bias apparently was not established, as shown through the manipulation check, analyses of reaction time data can not be interpreted as supporting or refuting the main hypothesis of this study.

In Hypothesis 3, it was predicted that subjects administered the evaluative trait scales after completing the computer task would show more evaluative ingroup bias than those subjects completing the evaluative trait scales before the computer task. As the results illustrate, the order of trait scale presentation did not affect subjects' trait scale ratings of ingroup members. Brewer and Silver (1978) also found no effect of the order of presentation on evaluative trait scale ratings, either before or after the behavioral measure, similar to the current results.

In spite of the shortcomings of this study, there are some points of interest worth noting. Contrary to pretesting results and previous research, subjects responded faster to the prime YOF than LAJ. These primes were selected from a group of nonsense syllables, established in a previous study as evaluatively neutral (Perdue et al., 1990). Pretesting with subjects drawn from the same population as this study showed no differences in reaction

times to either YOF or LAJ when presented as primes of positive and negative character traits. In the pretest subjects were instructed that YOF and LAJ were labels for groups of people, neither of which the subjects themselves were associated with. In the present study, subjects were aware that the labels referred to either their group or the other group, ostensibly determined by the dot estimation task. Whether this difference in methodology significantly influenced reaction times in favor of the YOF group label is unclear.

Another finding was subjects' quicker response times to positive than negative character traits across YOF and LAJ primes and group membership. This provides further support that the minimal group paradigm, as presented in this study, failed to establish a self-referential link between subjects and their minimal group labels.

Because minimal group identity was not established in this study, it should not be concluded that minimal group labels cannot be reference points that would facilitate processing of positive and negative information. A test of this hypothesis requires clear determination that the minimal group paradigm formed group boundaries and established ingroup bias.

In a future replication the Tajfel et al. (1971) paradigm could again be used in conjunction with a semantic priming task, but with an experimental population of either all male or all female subjects. Additionally, a mixed gender population should be used, but with more interaction between and within groups, a competitive element or a self esteem manipulation. It is possible that the results of this study are not a reflection of the inability of this paradigm to work, but rather an establishment of the lower limits of group identification necessary to influence processing of evaluative information.

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APPENDIX A

Instructions to Participants

Procedure

Subjects were assigned randomly to groups of 6 (half male and half female), seated at desks in a semicircle in front of a projection screen (room 305 Olin), given informed consents, and instructed as follows:

Experimenter 1- "The purpose of this study is to examine certain properties of visual perception.In order to study these perceptions we will have you do a perceptual task approximately 40 times. On the screen in front of you a number of images of dots will appear for 1000 milliseconds each. Following each of the 40 presentations, please estimate the number of dots that appear on the screen and record your estimation on the score sheet that was handed to you (Experimenter 2 distributes score sheets). Please make one estimation for each of the 40 dot presentations. When the dot presentations are completed we will collect and score your estimations. While your estimates are being scored please remain seated and do not talk with anyone else. Any questions?"

After the dot estimation sheets was collected Experimenter 2 took them to an adjacent room and ostensibly scored them. He was actually randomly assigning subjects to either the LAJ or YOF groups. Groups always consisted of either 1 male and 2 females or 1 female and 2 males, in order to control for sex effects. After assigning subjects to their groups, Experimenter 2 came back into the room and handed back the score sheets with the group label written on it and informed the subjects:

Experimenter 2- "New research in the area of brain functioning has proposed that there is a link between visual perception and cognitive processing efficiency. We would like to take advantage of your presence by having you participate in a short computer task that measures cognitive processing efficiency. You have been assigned to one of two groups, YOF or LAJ, based on your performance on the visual perception study just completed. Again your group membership is based on your performance on the visual perception task, and we would like to establish a link with your cognitive processing efficiency as measured by a computer task. I will take one of the groups and my assistant will take the other group to the computer facilities."

Experimenter 1 lead one of the two groups to either the human subjects lab (303) or to the computer lab (342) for the semantic priming task. Experimenter 2 lead the other group. The group taken, the computer room and the order of Experimenter 1 and 2 were counterbalanced for every group of 6 subjects. The experimenters did not answer any questions referring to group membership, except by saying " it was based on your performance on the dot estimation task". Prior to the semantic priming task, half of the subjects completed a series of evaluative trait scales, the other half of the subjects completed the trait scales after completing the semantic priming task. Subjects were seated at a computer and read the following instructions:

"The purpose of this portion of the study is to measure cognitive processing efficiency by examining the speed of categorization of people and objects. Your task will be to look at the computer screen on which the name of a group of people or objects like dog or tree will appear, and to read the name aloud, or to yourself and think about what you feel a typical member of that group is like. After a brief time the screen will go blank; then a second word like shady, gnarled, friendly or faithful will appear, and you must decide as quickly and accurately as possible whether the second word can ever be true of that group, first word, or is always false. You will indicate your decision by pressing a computer key. Press M or Z for yes an M or Z for no (order counterbalanced across subjects). After you see the second word hit one of the keys sharply and release. You should respond as fast and accurately as possible: we are recording both speed and the key you hit. We will begin with a set of practice trials using the categories tree and dog (experimenter observes subjects complete the practice trials and ensures subjects understand the task).

Now you will be presented with the names of two groups of people, LAJ and YOF, one of which you are a member of, as determined in the previous dot estimation task. Again respond as quickly and accurately as possible whether the second word such as kind, bad, or trustworthy can ever be true or is always false of the groups of people classified as YOF or LAJ on the basis of the visual perception task. Subjects in the pre-computer task trait scale condition were instructed as follows prior to the semantic priming instructions:

> "Before we begin, we would like you to respond to a few questions. Using the scales I have handed to you, indicate the extent to which a member of the LAJ or YOF group ranks on these characteristics. When you are finished I will collect the packets and get you started in the computer task"

Subjects in the post-computer task trait scale condition were instructed as follows:

"Before were finished today, we would like you to respond to a few questions.Using the scales I have handed to you, indicate the extent to which a member of the LAJ or YOF group ranks on these characteristics.When you are finished I will collect the packets and we will go back into the room were you made your original dot estimations for debriefing and your extra credit."

Prior to the semantic priming task, all subjects will be given another informed consent, covering all aspects of the task.

APPENDIX B

Debriefing Statement

DEBRIEFING

The purpose of this study was to examine the effects of minimal group identity on your reaction times to the positive and negative character traits that you saw in the semantic priming task. You were placed into either the YOF or LAJ group based on random assignment, rather than on your dot estimation performance, as you were informed. The reason for the deception was to demonstrate that even in conditions of random and arbitrary group assignment, positive bias towards members of ones own group is evident. We are predicting that your reaction times will be faster when your group label (either YOF or LAJ) is followed by a positive character trait.

The evaluative trait scales that you filled out are predicted to illustrate a positive bias towards members of your own group, which has been demonstrated previously in a number of studies. This study is going one step further by predicting that not only will ingroup bias be demonstrated on the evaluative trait scales, but the group identifications will affect the cognitive processing of positive and negative information.

We are sorry to have used deception, but felt it was minimal and necessary to the success of the experiment. Any information obtained from you will be used solely for scientific purposes. Again, if the experimenters are unable to answer any questions that you may have, please feel free to contact Dr. Judi Allen at 271-2861. We greatly appreciate your participation and you may keep a copy of this debriefing if you would like one.

APPENDIX C

Informed Consent

INFORMED CONSENT

The purpose of this research is to investigate properties of visual judgment. In order to do this study you will be asked to estimate the number of dots appearing on the screen in front of you and to record that estimation on the score sheets that will be provided to you.

You are in no way obligated to participate in this study. Should you decide to withdraw from this study you may do so at any time without penalty. At the end of this study please feel free to ask any questions you may have. If the experimenters are unable to answer your questions completely, feel free to contact Dr. Judi Allen at 271-2861.

By signing this form, you voluntarily agree to participate in this project. You can withdraw from this project at any time. You can decline to participate in any part of it or decline to answer any questions without prejudice. Any information obtained will be used solely for scientific purposes. You may keep a copy of this consent form if you would like one.

_____

Name (please print)

_____

Name (signature)

_____

Date

Sex (circle one) M F

_____

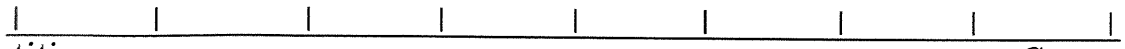
ID number

APPENDIX D

Evaluative Trait Scales

"YOF"

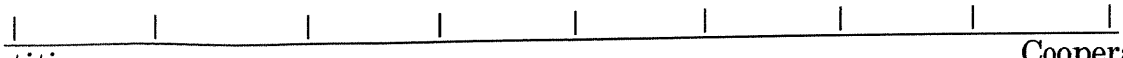
Indicate on this scale the extent to which a typical member of the "YOF" group ranks on this characteristic.



Competitive Cooperative

"LAJ"

Indicate on this scale the extent to which a typical member of the "LAJ" group ranks on this characteristic.



Competitive Cooperative

APPENDIX E

Example of Dot Estimation Task